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## ABSTRACT

This document, which is intended to serve as a guide for work force preparation program providers, details the Illinois occupational skill standards for programs preparing students for employment in jobs in the plastics molding industry. Agency partners involved in this project include: the Illinois State Board of Education, Illinois Community College Board, Illinois Board of Higher Education, Illinois Department of Commerce and Community Affairs, and the Illinois Department of Employment Security. The document begins with a brief overview of the Illinois perspective on occupational skill standards and credentialing, the process used to develop the skill standards, and assumptions underlying the standards. Presented next are skill standards for 22 tasks typically performed by individuals employed in occupations in the plastics molding cluster. Each skill standard statement contains the following components: (1) the actual skill standard (including the conditions of performance, work to be performed, and performance criteria); (2) performance elements; and (3) performance assessment criteria. The following are among the tasks for which skill standards are provided: (1)

maintaining a safe working environment; (2) handling various materials used in plastics molding; (3) using specific processing techniques (adjusting machine control parameters; troubleshooting; documenting process control changes; reporting shift production problems); (4) verifying part quality; and (5) performing secondary operations. Appended are the following: a glossary; lists of Illinois Occupational Skill Standards and Credentialing Council, Manufacturing Subcouncil, and Plastics Molding Skill Standards Development Committee members; and a list of necessary workplace skills. (MN)



# ILLINOIS

## OCCUPATIONAL SKILL STANDARDS

# PLASTICS MOLDING CLUSTER

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# **ILLINOIS OCCUPATIONAL SKILL STANDARDS PLASTICS MOLDING CLUSTER**

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# **ILLINOIS OCCUPATIONAL SKILL STANDARDS**

## **PLASTICS MOLDING CLUSTER**

Endorsed for Illinois  
by the  
Illinois Occupational Skill Standards  
and Credentialing Council

## A MESSAGE FROM THE ILLINOIS OCCUPATIONAL SKILL STANDARDS AND CREDENTIALING COUNCIL

Preparing youth and adults to enter the workforce and to be able to contribute to society throughout their lives is critical to the economy of Illinois. Public and private interest in establishing national and state systems of industry-driven skill standards and credentials is growing in the United States, especially for occupations that require less than a four-year college degree. This interest stems from the understanding that the United States will increasingly compete internationally and the need to increase the skills and productivity of the front-line workforce. The major purpose of skill standards is to promote education and training investment and ensure that this education and training enables students and workers to meet industry standards that are benchmarked to our major international competitors.

The Illinois Occupational Skill Standards and Credentialing Council (IOSSCC) has been working with industry subcouncils, the Illinois State Board of Education and other partnering agencies to adopt, adapt and/or develop skill standards for high-demand occupations. Skill standards products are being developed for a myriad of industries, occupational clusters and occupations. This document represents the collaborative effort of the Manufacturing Subcouncil, and the Plastics Molding Cluster Standards Development Committee.

These skill standards will serve as a guide to workforce preparation program providers in defining content for their programs and to employers to establish the skills and standards necessary for job acquisition. These standards will also serve as a mechanism for communication among education, business, industry and labor.

We encourage you to review these standards and share your comments. This effort has involved a great many people from business, industry and labor. Comments regarding their usefulness in curriculum and assessment design, as well as your needs for in-service and technical assistance in their implementation are critical to our efforts to move forward and improve the documents.

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We look forward to your comments.

Sincerely,

The Members of the IOSSCC

*Margaret Backhouse*      *Jane D. Byrne*      *Jim Schuff*  
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## TABLE OF CONTENTS

<b>Introduction</b>	The Illinois Perspective .....	vi
	IOSSCC Requirements for Occupational Skill Standards .....	viii
	Sample Format .....	ix
	Occupational Earnings and Employment Information .....	x
	Assumptions.....	xiv
	Performance Skill Levels .....	xv
<b>Setup</b>	Maintain a Safe Working Environment.....	1
	Communicate Production Requirements .....	3
	Remove, Install and Store Molding/Forming Tools.....	5
	Inspect Molding/Forming Tool for Damage .....	7
<b>Material Handling</b>	Dry Resin.....	9
	Blend Additives into Resin.....	11
	Monitor and maintain Regrind Feed Ratio.....	13
	Maintain Material Levels During Production .....	15
	Process Regrind Material.....	17
	Store Surplus and Regrind Material.....	19
<b>Processing Techniques</b>	Adjust Machine Control Parameters.....	21
	Practice Safe Processing Procedures.....	23
	Operate Molding Machine in Semi-Automatic and Automatic Modes.....	25
	Troubleshoot Processing Problems.....	27
	Document Process Control Changes.....	29
	Shut Down Processing Machine .....	31
	Report Shift Production Problems.....	33
<b>Part Quality Verification</b>	Perform Inspection .....	35
	Record SPC/Quality Data.....	37
<b>Secondary Operations</b>	Set Up Secondary Operation Tooling .....	39
	Verify Results of Secondary Operations.....	41
	Package Molded/Formed Products .....	33

The Occupational Skill Standards Act (PA 87-1210) established the nine-member Illinois Occupational Skill Standards and Credentialing Council (IOSSCC). Members of the IOSSCC represent business, industry and labor and are appointed by the Governor or State Superintendent of Education. The IOSSCC, working with the Illinois State Board of Education, Illinois Community College Board, Illinois Board of Higher Education, Illinois Department of Employment Security and Illinois Department of Commerce and Community Affairs, has created a common vision for workforce development in Illinois.

### **VISION**

**It is the vision of the IOSSCC to develop a statewide system of industry defined and recognized skill standards and credentials for all major skilled occupations providing strong employment and earnings opportunities in Illinois.**

The IOSSCC endorses occupational skill standards and credentialing systems for occupations that

- require basic workplace skills and technical training,
- provide a large number of jobs with either moderate or high earnings, and
- provide career advancement opportunities to related occupations with moderate or high earnings.

### **Subcouncils and Standards Development Committees**

Under the direction of the IOSSCC, and in cooperation with industry organizations and associations, industry subcouncils have been formed to review, approve and promote occupational skill standards and credentialing systems. The industry subcouncils are: Agriculture and Natural Resources; Applied Science and Engineering;\* Business and Administrative Information Services; Communications; Construction;\* Education and Training Services;\* Energy and Utilities;\* Financial Services; Health and Social Services; Hospitality; Legal and Protective Services;\* Manufacturing; Marketing and Retail Trade; and Transportation, Distribution and Logistics. (\*Indicates subcouncils identified for future development.)

Standards development committees are composed of business, labor and education representatives who are experts in the related occupational cluster. They work with the product developer to

- develop or validate occupational skill standards,
- identify related academic skills,
- develop or review assessment or credentialing approaches, and
- recommend endorsement of the standards and credentialing system to the industry subcouncil.

### **Expected Benefits**

The intent of skill standards and credentialing systems is to promote education and training investment and ensure that students and workers are trained to meet industry standards that are benchmarked to the state's major international competitors. Skill standards and credentialing systems have major benefits that impact students and workers, employers and educators in Illinois.



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### **Student and Worker Benefits**

- Help workers make better decisions about the training they need to advance their careers
- Allow workers to communicate more effectively to employers what they know and can do
- Improve long-term employability by helping workers move more easily among work roles
- Enable workers to help their children make effective academic and career and technical decisions

### **Employer Benefits**

- Focus the investment in training and reduce training costs
- Boost quality and productivity and create a more flexible workforce
- Improve employee retention
- Improve supplier performance
- Enlarge the pool of skilled workers

### **Educator Benefits**

- Keep abreast of a rapidly changing workplace
- Contribute to curriculum and program development
- Provide students with better career advice
- Strengthen the relationship between schools and local businesses
- Communicate with parents because educators have up-to-date information about industry needs

The IOSSCC is currently working with the Illinois State Board of Education and other state agencies to integrate the occupational standards with the Illinois Learning Standards which describe what students should know and be able to do as a result of their education. The IOSSCC is also working to integrate workplace skills—problem solving, critical thinking, teamwork, etc.—with both the Illinois Learning Standards and the Illinois Occupational Skill Standards.

## IOSSCC Requirements for Occupational Skill Standards

Illinois Occupational Skill Standards define what an individual should know and the expected level of performance required in an occupational setting. The standards focus on the most critical work performances for an occupation or occupational area.

### Endorsed Occupations

Any occupational skill standards and credentialing system seeking IOSSCC endorsement must

- represent an occupation or occupational cluster that meets the criteria for IOSSCC endorsement, including economic development, earnings potential and job outlook;
- address both content and performance standards for critical work functions and activities for an occupation or occupational area;
- ensure formal validation and endorsement by a representative group of employers and workers within an industry;
- provide for review, modification and revalidation by an industry group a minimum of once every five years;
- award credentials based on assessment approaches that are supported and endorsed by the industry and consistent with nationally recognized guidelines for validity and reliability;
- provide widespread access and information to the general public in Illinois; and
- include marketing and promotion by the industry in cooperation with the partner state agencies.

### Recognized Occupations

Occupations that do not meet the earnings criteria for IOSSCC endorsement but are part of an occupational cluster that is being developed may be presented for recognition by the IOSSCC. IOSSCC members encourage individuals to pursue occupational opportunities identified as endorsed occupations. Examples of occupations that do not meet the endorsement criteria, but have been recognized by the IOSSCC are Certified Nurse Assistant and Physical Therapy Aide.

### Skill Standards Components

Illinois Occupational Skill Standards must contain the following components:

- Performance Area
- Performance Skill
- Skill Standard
- Performance Elements
- Performance Assessment Criteria

The IOSSCC further identified three components (*Conditions of Performance, Work to be Performed and Performance Criteria*) of the Skill Standard component as critical work functions for an occupation or industry/occupational area. The sample format for Illinois Occupational Skill Standards on the following page provides a description of each component of an occupational skill standard.

The sample format also illustrates the coding at the top of each page identifying the state, fiscal year in which standards were endorsed, Subcouncil abbreviation, cluster abbreviation and standard number. For example, the twenty-fifth skill standard in the Plastics Molding Cluster, which has been developed by the Manufacturing Subcouncil, would carry the following coding:  
IL.01.MFG.PMC.25.

**SUMMARY OF WORK TO BE  
PERFORMED. SUMMARY IS BRIEF  
AND BEGINS WITH AN ACTION VERB.**

**IL.FY.SUBCOUNCIL. CLUSTER. STANDARD NO.**

**PERFORMANCE AREA**

**SKILL STANDARD**

**CONDITIONS OF PERFORMANCE**

A comprehensive listing of the information, tools, equipment and other resources provided to the person(s) performing the work.

**WORK TO BE PERFORMED**

An overview of the work to be performed in demonstrating the performance skill standard. This overview should address the major components of the performance. The detailed elements or steps of the performance are listed under "Performance Elements."

**PERFORMANCE CRITERIA**

The assessment criteria used to evaluate whether the performance meets the standard. Performance criteria specify product/outcome characteristics (e.g., accuracy levels, appearance, results, etc.) and process or procedure requirements (e.g., safety requirements, time requirements, etc.).

**PERFORMANCE ELEMENTS**

Description of the major elements or steps of the overall performance and any special assessment criteria associated with each element.

**PERFORMANCE ASSESSMENT CRITERIA**

Listing of required testing, certification and/or licensing.

Product and process used to evaluate the performance of the standard.

**PRODUCT**

Description of the product resulting from the performance of the skill standard.

**PROCESS**

Listing of steps from the Performance Elements which must be performed or the required order or performance for meeting the standard.

# **OCCUPATIONAL EARNINGS AND EMPLOYMENT INFORMATION PLASTICS MOLDING CLUSTER**

## **I. Developmental Process and Occupational Definitions**

### **A. Developmental Process**

After studying labor market information, the Manufacturing Subcouncil recommended that Plastics Molding Cluster be an occupational area for which performance skill standards would be developed. This cluster meets the criteria established by the Illinois Occupational Skill Standards Credentialing Council (IOSSCC) for performance skill standard development, education and training requirements, employment opportunities, earnings potential and career opportunities. The careers identified in the Plastics Molding Cluster include operators, material handlers, molding technician, automation technician and production coordinator. A product developer knowledgeable about the plastics industry began the process of performance skill identification. The product developer prepared an outline and framework designed to address the major skills expected in the workplace. The framework addresses skill requirements common to companies in the plastics industry.

The subcouncil recommended the final skill standards product be presented to the IOSSCC. The IOSSCC reviewed the skill standards and met with the product developer, state liaison and chair of the subcouncil. Based on the review, the IOSSCC voted to endorse the Plastics Molding Cluster skill standards, recognizing the occupations of Operator and Material Handler. (See Page vii)

#### **1. Resources**

Common and accepted references provided reinforcement for the direction given in the occupational framework. Those references included current texts used by educational institutions, curriculum guides from Illinois and other states, and job descriptions from plastics companies. Various people employed by plastics companies were contacted.

#### **2. Standards Development Committee**

A standards development committee (SDC) composed of individuals who work in the plastics industry was convened. The framework, initial outline, matrix and draft skill standards were presented to the SDC for review, revision, adjustment and validation. At a third and final meeting, educators joined the SDC to review the skill standards for consistency in terminology and the assessment criteria for content.

### **B. Occupational Definitions**

#### **1. Operator**

Operators are responsible for installing and removing the molding tool from the molding machine. They operate overhead cranes to move the tooling into place. Once the molding tool is in place, the operator may program the molding machine according to a mold set-up sheet. This person may also be required to operate the molding machine to verify proper cycling of the tool. Upon removing the molding tool from the molding machine the operator inspects the molding tool for damage. They then perform routine preventative maintenance on the molding tool prior to storage. Operators coordinate with the production coordinator to ensure that the molding/forming tooling is in place and operational before production is scheduled to begin.

## **2. Material Handler**

The material handler is responsible for monitoring and maintaining the supply of molding materials during production. They program and operate material handling equipment and dryers to convey plastic resin from storage areas, to drying areas, and then to the molding machines. When necessary, material handlers program mixing devices that add the proper amount of color concentrate to the resin supply to obtain the correct color in the molded product. Another important task of the material handler is to keep contaminants out of the resin supply during the conveying and drying operations. They also are responsible for the operation of granulators that convert molded plastic into regrind. The regrind may be fed back into the resin supply and made into products. Material handlers work with the production coordinator to ensure the delivery of properly dried, color matched, and contaminant free resin for production.

## **3. Molding Technician**

The molding technician is responsible for monitoring and adjusting the operation of the molding machine during production. Depending upon the facility, the molding technician may also be responsible for the molding tool set-up and material handling. During routine production, the molding technician may manually trim excess plastic from molded parts, inspect parts for defects, and record quality control data. The molding technician is first in line for correcting molding defects. The technician does this by performing proper troubleshooting techniques to adjust factors that are likely affecting part quality. The molding technician is also responsible for documenting changes made to the process control settings of the molding machine. Molding technicians may also be responsible for setting-up and running secondary processing equipment. During a secondary process a molded product may be assembled with other parts, decorated or inspected. Finally, a molding technician may perform packing operations where molded products are prepared for shipping. The molding technician works with the production coordinator to ensure efficient production of products and a smooth transition during product change over.

## **4. Automation Technician**

The automation technician sets up and operates computer-numerically-controlled machine tools or robots to perform one or more machine functions on plastic workpieces. Extensive knowledge of computer-operated equipment is required to have the ability to make the production run smoothly.

## **5. Production Coordinator**

The production coordinator supervises the production personnel. This person is responsible for maintaining production quotas and effecting a smooth transition from the production of one product to another. Production coordinators should be able to work well with people and be keenly aware of processing problems that may occur during production.

With training and experience, employees working as either operators, material handlers, or molding technicians can obtain a position of production coordinator.

# **II. Employment and Earnings Opportunities**

## **A. Education and Training Requirements**

Plastics Molding Cluster occupations require basic workplace skills and training according to industry/organization standards. Requirements will also vary depending on the employer. A high school diploma or GED is required for the

occupations outlined in the Plastics Molding Cluster. Often, entry level employees are hired at a low skill level and improve skills through on-the-job training. Promotion to higher skill jobs within the given company is common. Apprenticeship and postsecondary programs are also available for the plastics industry.

## B. Employment Opportunities

Job prospects are projected to be favorable for operators, material handlers and production coordinators through 2008. Candidates with the necessary mechanical and mathematical aptitudes should encounter ample demand for their skills.

Job prospects are projected to be very favorable for molding technicians and automation technicians through 2008 although competition will be high. Those with experience and the ability to work with various types of equipment will have the best opportunities.

## C. Earnings Opportunities

	Middle Range Annual Earnings 1999*
Operator	\$ 17,035 - \$ 22,360
Material Handler	\$ 17,160 - \$ 23,560
Molding Technician	\$ 18,100 - \$ 29,700
Automation Technician	\$ 20,400 - \$ 34,100
Production Coordinator	\$ 31,200 - \$ 41,600

*\*Middle Range is the middle 50%, i.e., one-fourth of persons in the occupation earn below the bottom of the range and one-fourth of persons in the occupation earn above the top of the range.*

*Sources: 2000 Occupational Employment Statistics: Wage Data and Occupational Projections 2008, Illinois Department of Employment Security, Economic Information and Analysis Division; Horizons Career Information System.*

## III. Assessment and Credentialing Systems

The IOSSCC recognizes that industry commitment for third-party assessment is beneficial and requests that each SDC and/or subcouncil identifies the most beneficial method for assessing the standards.

National certification in plastics is sponsored by the Society of the Plastics Industry. This certification is geared to skilled machine operators, process technicians, setup technicians, supervisors.

## IV. Industry Support and Commitment

The primary areas currently identified for industry support and commitment of occupational skill standards are development, updating and marketing. Business and industry partners may identify future uses of occupational skill standards such as credentialing/certification, career development of employees and specifications for out-source training programs.

### A. Industry Commitment for Development and Updating

1. The development of skill standards for the Plastics Molding Cluster is the direct result of efforts by the Manufacturing Subcouncil and the Plastics Molding Cluster SDC. Names of the persons serving on the subcouncil and the SDC are located in the appendices.
2. In developing the products, the following steps were completed.
  - a. Identification and prioritization of career ladder, identifying jobs by name
  - b. Review of resources
  - c. Development of draft matrix of performance standards
  - d. Development of performance standard that was identified on matrix
  - e. Convening of SDC

- f. Review, validation and approval of skill standards by the SDC
- g. Review and approval of standards by the Manufacturing Subcouncil
- h. Endorsement of skill standards by the IOSSCC

#### **B. Industry Commitment for Marketing**

The Manufacturing Subcouncil is committed to marketing and obtaining support and endorsement from the leading industry associations impacted by the skill standards. Upon recognition/endorsement of the standards by the IOSSCC, the subcouncil strongly recommends that professional trade groups, academic groups, etc. develop and provide an in-service/seminar package to promote skill standard awareness and obtain full industry support and commitment for the development of a full industry marketing plan.

The Manufacturing Subcouncil encourages the availability of skill standards to the public, including learners, parents, workers, educators at all levels, employers and industry personnel.



## **ASSUMPTIONS FOR PLASTICS MOLDING CLUSTER SKILL STANDARDS**

**Skill standards assume that individuals have received education and/or training in a setting such as a secondary, postsecondary and/or apprenticeship/on-the-job training program and have the background knowledge necessary for performing the skill standards contained in this publication. The education and/or training includes instruction for the proper handling and operation of materials, tools and equipment required for performing the skills including the purpose of use, when to use, how to use and any related safety issues. The training program must adhere to all local, state and federal licensing and/or certification requirements as set by law, if applicable.**

The Plastics Molding Cluster Standards Development Committee developed these skill standards based on the following assumptions:

1. Workplace skills (employability skills) are expected of the individual. Socialization skills needed for work are related to lifelong career experience and are not solely a part of the initial schooling process. These are not included with this set of statements.
2. Specific policies and procedures of the work site will be made known to the individual and will be followed.
3. Time elements outlined for the skill standards result from the experience and consideration of the panel of experts who made up the standards development committee.
4. Skills will progress from simple to complex. Once a skill has been successfully completed, it will be incorporated into more complex skills.
5. Skill standards describe the skill only and do not detail the background knowledge or theory related to the particular skill base. Although the skill standard enumerates steps to successful demonstration, rote approaches to the outcomes are not prescribed.
6. Skills will be completed in an expedient and safe manner.
7. Skill standards are selected because they meet workplace needs and are designed to meet professional standards of practice.
8. Skill standards do not replace, supersede or substitute for procedure manuals.
9. Skill standards do not supersede or take the place of industry certification or graduation from an accredited program of study.
10. In all areas, appropriate theory, safety and support instruction will be required for performing each task.
11. Individuals are expected to know how to perform research and use industry reference and training materials.
12. All diagnostic and repair tasks are to be accomplished in accordance with the manufacturers' recommended procedures.
13. Skill standards are performed to the level of accuracy determined by the manufacturer and/or the facility's policy and procedures.
14. Appropriate personal protective equipment (PPE) is worn throughout the skill performance when necessary, as determined by the facility's policy and procedures and local, state and federal standards/regulations.



## PERFORMANCE SKILL LEVELS

	OPERATOR	MATERIAL HANDLER	MOLDING TECHNICIAN	AUTOMATION TECHNICIAN	PRODUCTION COORDINATOR
<b>SETUP</b>					
Maintain a Safe Working Environment	•	•	•	•	•
Communicate Production Requirements		•	•		•
Remove, Install and Store Molding/Forming Tools	•		•		
Inspect Molding/Forming Tool for Damage	•		•		
<b>MATERIAL HANDLING</b>					
Dry Resin		•	•		
Blend Additives into Resin		•	•		
Monitor and Maintain Regrind Feed Ratio		•	•		
Maintain Material Levels During Production		•	•		
Process Regrind Material		•	•		
Store Surplus and Regrind Material	•	•	•		
<b>PROCESSING TECHNIQUES</b>					
Adjust Machine Control	•		•		
Practice Safe Processing Procedures	•		•		
Operate Molding Machine in Semi-Automatic and Automatic Modes	○		○		
Troubleshoot Processing Problems			•		
Document Process Control Changes			•		
Shut Down Processing Machine			•		
Report Shift Production Problems			•		•
<b>PART QUALITY VERIFICATION</b>					
Perform Inspection	•		•		
Record SPC/Quality Data	•		•		
<b>SECONDARY OPERATIONS</b>					
Set Up Secondary Operation Tooling			•	•	
Verify Results of Secondary Operations	•		•	•	
Package Molded/Formed Products	•	•	•		

**SKILL STANDARD****CONDITIONS OF PERFORMANCE**

Given the following:

- Personal Protective Equipment (PPE)
- Material Safety Data Sheets (MSDS)
- Cleaning supplies
- Equipment manufacturers' specifications
- Material manufacturers' specifications
- Facility's policy and procedures
- Local, state and federal standards/regulations

**WORK TO BE PERFORMED**

Maintain a safe working environment.

**PERFORMANCE CRITERIA**

Skill is performed according to molder/former's specifications.

Time required to complete the skill varies depending upon size and layout of work area. Maintaining a safe working environment is ongoing.

**PERFORMANCE ELEMENTS**

1. Put on PPE.
2. Follow and obey all safety requirements (e.g., Occupational Safety and Health Administration [OSHA] requirements, lockout/tagout, etc.) for specific work area.
3. Maintain clean working area free of spills and clutter. (Note: Use of compressed air to clean area of debris is prohibited.)
4. Clean up all spills immediately in accordance with state and federal standards/regulations.
5. Remove or store material that poses a tripping hazard (e.g., route hoses, electrical cable, etc.).
6. Ensure proper ventilation to avoid collection of fumes.
7. Fill out appropriate MSDS forms/records and file in appropriate location.

**PERFORMANCE ASSESSMENT CRITERIA**

All local, state and federal standards/regulations are followed.

All manufacturers' specifications and facility's policy and procedures are followed.

**PRODUCT**

---

A safe working environment is maintained according to local, state and federal regulations.

**PROCESS**

---

All performance elements for maintaining a safe working environment are critical. Performance elements are numbered to show an appropriate sequence for completing the skill; however, a different sequence may be used.

**SKILL STANDARD****CONDITIONS OF PERFORMANCE**

Given the following:

- Personal Protective Equipment (PPE)
- Production requirements
- Specification sheets (e.g., cycle time, material weights, etc.) for products to be molded/formed
- Material inventory sheet
- Equipment manufacturers' specifications
- Material manufacturers' specifications
- Facility's policy and procedures
- Local, state and federal standards/regulations

**WORK TO BE PERFORMED**

Communicate production requirements to setup, material handling, molding and secondary operations personnel.

**PERFORMANCE CRITERIA**

Skill is performed according to molder/former's specifications.

Time required to complete the skill varies with production requirements.

**PERFORMANCE ELEMENTS**

1. Confirm inventory of material needed for primary operations is adequate.
2. Confirm inventory of material needed for secondary operations is adequate.
3. Confirm mold tooling is ready for production.
4. Confirm secondary operation tooling is ready for production.
5. Confirm molding machines are ready for operation.
6. Communicate production goals to following personnel departments:
  - a. Setup
  - b. Material handling
  - c. Molding
  - d. Secondary operations

**PERFORMANCE ASSESSMENT CRITERIA**

All local, state and federal standards/regulations are followed.

All manufacturers' specifications and facility's policy and procedures are followed.

**PRODUCT**

All production requirements are communicated to appropriate personnel.

**PROCESS**

All performance elements for communicating production requirements are critical and must be performed in sequence.

**SKILL STANDARD****CONDITIONS OF PERFORMANCE**

Given the following:

- Personal Protective Equipment (PPE)
- Production requirements
- Lockout locks
- Molding/forming tool
- Equipment manufacturers' specifications
- Facility's policy and procedures
- Local, state and federal standards/regulations

**WORK TO BE PERFORMED**

Remove, install and store molding/forming tools.

**PERFORMANCE CRITERIA**

Skill is performed according to molder/former's specifications.

Time required to complete the skill varies with mold change and equipment.

**PERFORMANCE ELEMENTS**

1. Determine that mold change is required during shift.
2. Inspect last shots or mold round from molding/forming tool for defects.
3. Turn off power supply to molding/forming machine and lockout.
4. Clean existing mold according to facility's policy and procedures.
5. Remove auxiliary equipment and connections to mold.
6. Follow manufacturers' specifications (e.g., mold set function, etc.) for removal of mold.
7. Follow manufacturers' specifications (e.g., mold set function, etc.) for job/mold change.
8. Follow facility's policy and procedures for storage/maintenance of mold.
9. Follow setup procedures according to job specifications.

**PERFORMANCE ASSESSMENT CRITERIA**

All local, state and federal standards/regulations are followed.

All manufacturers' specifications and facility's policy and procedures are followed.

**PRODUCT**

Molding/forming tool is properly removed, installed and stored.

**PROCESS**

All performance elements for safe removal, installation and storage of molding/forming tools are critical and must be performed in sequence.

**SKILL STANDARD**

**CONDITIONS OF PERFORMANCE**

Given the following:

Personal Protective Equipment (PPE)  
Material Safety Data Sheets (MSDS)  
Production schedule  
Molding/forming tool  
Specification sheets for products to be molded/formed  
Samples from last mold round  
Facility's policy and procedures  
Equipment manufacturers' specifications  
Local, state and federal standards/regulations

**WORK TO BE PERFORMED**

Inspect molding/forming tool for damage.

**PERFORMANCE CRITERIA**

Skill is performed according to molder/former's specifications.

Time required to complete the skill varies.

**PERFORMANCE ELEMENTS**

1. Inspect molding/forming tool where applicable.
2. Inspect mold cavity for surface defects.
3. Inspect ejection mechanism of mold.
4. Check movable portions of mold for proper actuation.
5. Check alignment of mold halves for proper alignment.
6. Inspect vents or air holes to ensure they are not plugged with residue.
7. Record and report damage to molding/forming tool on appropriate forms.

**PERFORMANCE ASSESSMENT CRITERIA**

All local, state and federal standards/regulations are followed.

All manufacturers' specifications and facility's policy and procedures are followed.



**PRODUCT**

Molding/forming tool is inspected for damage and is free of defects that would degrade product quality.

**PROCESS**

All performance elements for inspecting molding/forming tool for damage are critical and must be performed in sequence.

**SKILL STANDARD****CONDITIONS OF PERFORMANCE**

Given the following:

- Personal Protective Equipment (PPE)
- Material Safety Data Sheets (MSDS)
- Raw material requirements
- Process setup sheet
- Material handling system
- Hopper dryer system
- Dry resin specifications
- Storage containers of resin
- Equipment manufacturers' specifications
- Material manufacturers' specifications
- Facility's policy and procedures
- Local, state and federal standards/regulations

**WORK TO BE PERFORMED**

Dry resin.

**PERFORMANCE CRITERIA**

A clean work environment is maintained.

Skill is performed according to molder/former's specifications.

Selection of resin and programming of drying is performed to a level of 100% accuracy.

Time required to complete the skill varies with material handling system available, drying system available and raw material requirements for shift.

**PERFORMANCE ELEMENTS**

1. Determine raw material requirements for shift by reviewing production requirements for shift, and process setup sheet.
2. Assess if raw material requirements can be met with available resin supply in storage.
3. Transfer additional resin from storage to meet raw material requirements if necessary.
4. Purge hopper dryer system of any residual resin that may be in hopper or feed lines.
5. Convey required amount of resin to hopper dryer system, using material handling system.
6. Program hopper dryer system to dry specified resin per guidelines established by material manufacturers' specifications.
7. Troubleshoot system using appropriate skills

## PERFORMANCE ASSESSMENT CRITERIA

All local, state and federal standards/regulations are followed.

All manufacturers' specifications and facility's policy and procedures are followed.

### PRODUCT

Resin is selected and dried to meet raw material demands for specified production shift.

### PROCESS

All performance elements for drying resin are critical and must be performed in sequence.

**SKILL STANDARD****CONDITIONS OF PERFORMANCE**

Given the following:

- Personal Protective Equipment (PPE)
- Material Safety Data Sheets (MSDS)
- Production requirements
- Raw material requirements
- Process setup sheet
- Inventory sheet of additives
- Inventory sheet of resin
- Material handling system
- Material blending system
- Equipment manufacturers' specifications
- Material manufacturers' specifications
- Facility's policy and procedures
- Local, state and federal standards/regulations

**WORK TO BE PERFORMED**

Blend proper amount of additives into resin to meet production requirements.

**PERFORMANCE CRITERIA**

A clean work environment is maintained.

Skill is performed according to molder/former's specifications.

Percent of additives in resin is consistent with material/product's specifications and is maintained to acceptable level according to manufacturers' specifications.

Time required to complete the skill varies with material handling system available, drying system available and raw material requirements for shift.

**PERFORMANCE ELEMENTS**

1. Determine material handling system for resin and additives is functioning properly.
2. Adjust introduction rate of additive delivery system according to process setup sheet.
3. Blend additives into resin.
4. Monitor consumption to ensure adequate supply.

**PERFORMANCE ASSESSMENT CRITERIA**

All local, state and federal standards/regulations are followed.

All manufacturers' specifications and facility's policy and procedures are followed.

**PRODUCT**

Resin to be molded into products during shift has proper amount of additives.

**PROCESS**

All performance elements for blending additives into resin during production shift are critical and must be performed in sequence.

**SKILL STANDARD**

**CONDITIONS OF PERFORMANCE**

Given the following:

- Personal Protective Equipment (PPE)
- Material Safety Data Sheets (MSDS)
- Raw material requirements
- Process setup sheet
- Inventory sheet of scrap material to be ground
- Inventory sheet of regrind
- Capacity of granulator to grind scrap
- Material handling system
- Material blending system
- Hopper/dryer system or dryer system
- Computer workstation (i.e., computer, printer, software, manuals, etc.)
- Equipment manufacturers' specifications
- Material manufacturers' specifications
- Facility's policy and procedures
- Local, state and federal standards/regulations

**WORK TO BE PERFORMED**

Monitor and maintain correct supply of regrind required for production schedule.

**PERFORMANCE CRITERIA**

A clean work environment is maintained.

Skill is performed according to molder/former's specifications.

Percentage of regrind molded into products is maintained according to customer and/or manufacturers' specifications.

Time required to complete the skill varies depending on material handling system available, drying system available, raw material requirements for shift and capacity of available granulator.

**PERFORMANCE ELEMENTS**

1. Determine that material handling system and granulator for regrind are free of contamination and functioning properly.
2. Inspect regrind for contamination using appropriate procedures, (e.g., metal separation, visual inspection for contamination, etc.).
3. Adjust feed ratios per process setup sheet.

4. Determine if regrind requires drying; if so, then transport regrind to drying system.
5. Meet production schedule by supplementing any deficiency in available regrind by granulating available reusable material.
6. Inspect feed ratio of regrind going into resin that is ready for molding.

## **PERFORMANCE ASSESSMENT CRITERIA**

All local, state and federal standards/regulations are followed.

All manufacturers' specifications and facility's policy and procedures are followed.

### **PRODUCT**

Regrind feed ratio is maintained and monitored.

### **PROCESS**

All performance elements for monitoring and maintaining regrind feed ratio are critical. Performance elements are numbered to show an appropriate sequence for completing the skill; however, a different sequence may be used.

**SKILL STANDARD**

**CONDITIONS OF PERFORMANCE**

Given the following:

- Personal Protective Equipment (PPE)
- Material Safety Data Sheets (MSDS)
- Production requirements
- Production schedule
- Process setup sheet
- Quantity of resin required for production schedule
- Computer workstation (i.e., computer, printer, software, manuals, etc.)
- Material handling system
- Hopper/dryer system or dryer system
- Equipment manufacturers' specifications
- Material manufacturers' specifications
- Facility's policy and procedures
- Local, state and federal standards/regulations

**WORK TO BE PERFORMED**

Maintain material (e.g., inserts, labels, resin, etc.) levels during production run.

**PERFORMANCE CRITERIA**

A clean work environment is maintained.

Skill is performed according to molder/former's specifications.

Time required to complete the skill varies depending on production schedule.

**PERFORMANCE ELEMENTS**

1. Confer with production coordinator or review production quota sheet for upcoming shift to determine if product change will occur.
2. Evaluate material consumption rate.
3. Anticipate and maintain raw material requirements to support production.

**PERFORMANCE ASSESSMENT CRITERIA**

All local, state and federal standards/regulations are followed.

All manufacturers' specifications and facility's policy and procedures are followed.

All local, state and federal standards/regulations are followed.



**PRODUCT**

Material levels are maintained during production.

**PROCESS**

All performance elements for maintaining material levels during production are critical and must be performed in sequence.

**SKILL STANDARD****CONDITIONS OF PERFORMANCE**

Given the following:

- Personal Protective Equipment (PPE)
- Material Safety Data Sheets (MSDS)
- Production requirements
- Delivery systems (e.g., sprue, runners, etc.)
- Defective parts
- Granulator
- Operator/service manual for granulator
- Equipment manufacturers' specifications
- Material manufacturers' specifications
- Facility's policy and procedures
- Local, state and federal standards/regulations

**WORK TO BE PERFORMED**

Process regrind material by converting molded resin into granulated material that can be reprocessed.

**PERFORMANCE CRITERIA**

Regrind is free of contamination.

A clean work environment is maintained.

Skill is performed according to molder/former's specifications.

Time required to complete the skill depends upon type of gating system used on mold, mold cavitation and layout of granulator system with respect to molding machine.

**PERFORMANCE ELEMENTS**

1. Degate molded products requiring manual degating.
2. Complete following steps for facilities with machine side granulator:
  - a. Convey delivery systems to granulator.
  - b. Convey defective molded products to granulator.
  - c. Hold delivery systems or products that are defective due to thermal degradation or other contamination to granulator.
3. Complete following steps for facilities with centralized granulator:
  - a. Sort delivery systems into storage containers for later granulation.
  - b. Sort defective molded products into storage containers for later granulation.
  - c. Hold (do not mix) delivery systems or products that are defective due to thermal degradation or other contamination with material that is to be granulated for subsequent molding.

4. Comply with lockout/tagout procedures per facility's policy and procedures before cleaning or maintaining granulator.
5. Maintain operation of granulator by routine inspection of knives and screens.

## **PERFORMANCE ASSESSMENT CRITERIA**

All local, state and federal standards/regulations are followed.

All manufacturers' specifications and facility's policy and procedures are followed.

### **PRODUCT**

Regrind material is processed and granulated for subsequent molding.

### **PROCESS**

All performance elements for processing regrind materials are critical and must be performed in sequence.

**SKILL STANDARD**

**CONDITIONS OF PERFORMANCE**

Given the following:

- Personal Protective Equipment (PPE)
- Material Safety Data Sheets (MSDS)
- Surplus and/or regrind material
- International Organization for Standardization (ISO), Quality System (QS), and Good Manufacturing Practice (GMP) requirements for documentation
- Facility's policy and procedures
- Local, state and federal standards/regulations

**WORK TO BE PERFORMED**

Store surplus and regrind material.

**PERFORMANCE CRITERIA**

Skill is performed according to molder/former's specifications.

A clean work environment is maintained.

Time required to complete the skill depends upon type and amount of surplus and regrind material.

**PERFORMANCE ELEMENTS**

1. Follow facility's policy and procedures to keep work area free of spills and avoid contamination of molding materials.
2. Place surplus resin or granulated material into appropriate container.
3. Properly identify container.
4. Transport container from molding area to storage area.

**PERFORMANCE ASSESSMENT CRITERIA**

All local, state and federal standards/regulations are followed.

All manufacturers' specifications and facility's policy and procedures are followed.

**PRODUCT**

Surplus and regrind material are properly stored, labeled and shipped to storage.

**PROCESS**

All performance elements for storing surplus and regrind material are critical and must be performed in sequence.

**SKILL STANDARD****CONDITIONS OF PERFORMANCE**

Given the following:

- Personal Protective Equipment (PPE)
- Mold setup information
- Molding/forming tool
- Molding/forming machine operation manual
- Equipment manufacturers' specifications
- Material manufacturers' specifications
- Facility's policy and procedures
- Local, state and federal standards/regulations

**WORK TO BE PERFORMED**

Adjust machine control parameters per mold setup information.

**PERFORMANCE CRITERIA**

Skill is performed according to molder/former's specifications.

Time required to complete the skill is 15 minutes.

**PERFORMANCE ELEMENTS**

1. Consult mold setup information that accompanies installed mold.
2. Turn on molding/forming machine control voltage.
3. Set temperatures, pressures, position and timers according to operation manual of molding/forming machine and in accordance with mold setup information.
4. Ensure all peripheral equipment meets requirements per setup information.
5. Dry cycle molding/forming machine to check proper operation.
6. Troubleshoot system using appropriate skills if dry cycle creates error.

**PERFORMANCE ASSESSMENT CRITERIA**

All local, state and federal standards/regulations are followed.

All manufacturers' specifications and facility's policy and procedures are followed.

**PRODUCT**

Machine control parameters are set to mold/form products from installed mold.

**PROCESS**

All performance elements for adjusting machine control parameters per mold setup information are critical and must be performed in sequence.

**SKILL STANDARD**

**CONDITIONS OF PERFORMANCE**

Given the following:

- Personal Protective Equipment (PPE)
- Mold set-up information
- Molding/forming tool mounted between machine platens
- Operational molding/folding machine
- Molding/folding machine operation manual
- Facility's safety policy handbook
- Material manufacturers' processing guidelines
- Equipment manufacturers' specifications
- Facility's policy and procedures
- Local, state and federal standards/regulations

**WORK TO BE PERFORMED**

Practice safe processing procedures.

**PERFORMANCE CRITERIA**

Skill is performed according to molder/former's specifications.

Practice of safe processing procedures is ongoing.

**PERFORMANCE ELEMENTS**

1. Operate equipment only after receiving sufficient training on safe control of machine.
2. Adhere to guidelines specified by material/equipment manufacturers.
3. Adhere to guidelines noted in facility's safety manual.
4. Use caution and be aware of others in work area, and anticipate how they may become injured by operation of molding/forming machine.

**PERFORMANCE ASSESSMENT CRITERIA**

All local, state and federal standards/regulations are followed.

All manufacturers' specifications and facility's policy and procedures are followed.



**PRODUCT**

Safe processing procedures are practiced.

**PROCESS**

All performance elements for practicing safe processing procedures are critical. Performance elements are numbered to show an appropriate sequence for completing the skill; however, a different sequence may be used.

**SKILL STANDARD**

**CONDITIONS OF PERFORMANCE**

Given the following:

- Personal Protective Equipment (PPE)
- Mold setup information
- Mold mounted between machine platens
- Operational molding/forming machine
- Approved standards (e.g., properly molded/formed product, etc.)
- Molding/forming machine operation manual
- Material manufacturers' processing guidelines
- Equipment manufacturers' specifications
- Material manufacturers' specifications
- Facility's policy and procedures
- Local, state and federal standards/regulations

**WORK TO BE PERFORMED**

Operate molding machine in semi-automatic and automatic modes.

**PERFORMANCE CRITERIA**

Verification of safety devices is demonstrated.

Skill is performed according to molder/former's specifications.

Time required to complete the skill varies.

**PERFORMANCE ELEMENTS**

1. Consult mold setup information for installed mold.
2. Verify setup parameters match those specified in mold setup information.
3. Verify that machine is ready for operation (e.g., temperatures are correct, feed of material, safety devices and interlocks are operational, etc.).
4. Operate molding/forming machine in semi-automatic mode to make product.
5. Verify that molding/forming operation proceeded as expected for first molding cycle.
6. Switch machine control to automatic.
7. Monitor machine operation for proper action.
8. Check molded/formed product for defects/changes.
9. Apply troubleshooting techniques as needed.

## **PERFORMANCE ASSESSMENT CRITERIA**

All local, state and federal standards/regulations are followed.

All manufacturers' specifications and facility's policy and procedures are followed.

### **PRODUCT**

Molding/forming machine is operated in semi-automatic and automatic modes.  
Molding/forming machine control settings specified on mold setup information are verified to make acceptable products.

### **PROCESS**

All performance elements for operating molding machines in semi-automatic and automatic modes are critical and must be performed in sequence.

**SKILL STANDARD****CONDITIONS OF PERFORMANCE**

Given the following:

- Personal Protective Equipment (PPE)
- Defective molded/formed product
- Mold setup information
- Molding/forming tool mounted between machine platens
- Examples of acceptable products
- Examples of processing defects in products
- Appropriate troubleshooting tools
- Record of process settings used when defective parts were made
- Process defect cause matrix for process being used
- Basic knowledge of process control of molding/forming process
- Approved standards (e.g., properly molded/formed product, etc.)
- Material manufacturers' processing guidelines
- Machine molding/forming operation manual
- Equipment manufacturers' specifications
- Material manufacturers' specifications
- Facility's policy and procedures
- Local, state and federal standards/regulations

**WORK TO BE PERFORMED**

Troubleshoot processing problems.

**PERFORMANCE CRITERIA**

Skill is performed to level of proficiency established by molder/former.

Skill is performed according to molder/former's specifications.

Potential causes of product defect are identified.

Time required to complete the skill varies depending on complexity of processing problem.

**PERFORMANCE ELEMENTS**

1. Determine if product defect is similar to known defects as seen on examples of defective parts or on another accepted reference.
2. Isolate possible causes of defect by referring to accepted list of possible causes for product defects.
3. Compare current machine, mold and process settings to established values to determine root cause of defect.

4. Apply recommended troubleshooting procedures to resolve molding/forming problem. (For example: Adjust process settings one at a time to minimize molding/forming defect; adjust process variable that will have greatest impact on product defect; etc.)

## **PERFORMANCE ASSESSMENT CRITERIA**

All local, state and federal standards/regulations are followed.

All manufacturers' specifications and facility's policy and procedures are followed.

### **PRODUCT**

Troubleshooting processing problems to identify cause of product defect is completed and corrective action is implemented.

### **PROCESS**

All performance elements for troubleshooting processing problems are critical. Performance elements are numbered to show an appropriate sequence for completing the skill; however, a different sequence may be used.

**SKILL STANDARD**

**CONDITIONS OF PERFORMANCE**

Given the following:

- Mold setup information
- Molding/forming tool mounted between machine platens
- Record book or database program to record changes
- Computer workstation (i.e., computer, printer, software, manuals, etc.)
- Molding/forming machine operation manual
- Material manufacturers' processing guidelines
- Equipment manufacturers' specifications
- Facility's policy and procedures
- Local, state and federal standards/regulations

**WORK TO BE PERFORMED**

Document process control changes to molding parameters made to mold/form products.

**PERFORMANCE CRITERIA**

Skill is performed according to molder/former specifications.

Time required to complete the skill varies depending on process control changes to be documented.

**PERFORMANCE ELEMENTS**

1. Identify differences between current machine process settings and those specified on mold setup information.
2. Document process condition changes per facility's policy and procedures.
3. Retain sample products before and after process change for future reference, if required per facility's policy and procedures.

**PERFORMANCE ASSESSMENT CRITERIA**

All local, state and federal standards/regulations are followed.

All manufacturers' specifications and facility's policy and procedures are followed.

**PRODUCT**

---

Changes to process control are recorded for future reference.

**PROCESS**

---

All performance elements for documenting process control changes are critical.  
Performance elements are numbered to show an appropriate sequence for completing the skill; however, a different sequence may be used.

**SKILL STANDARD****CONDITIONS OF PERFORMANCE**

Given the following:

- Personal Protective Equipment (PPE)
- Molding/forming tool mounted in machine
- Operational molding/forming machine
- Molding/forming machine operation manual
- Equipment manufacturers' specifications
- Material manufacturers' specifications
- Facility's policy and procedures
- Local, state and federal standards/regulations

**WORK TO BE PERFORMED**

Shut down processing machine and prepare molding/forming machine for idle time.

**PERFORMANCE CRITERIA**

Skill is performed according to molder/former's specifications.

Time required to complete the skill varies depending on complexity of molding/forming tool and size of molding machine.

**PERFORMANCE ELEMENTS**

1. Stop flow of material to be processed by machine.
2. Cycle machine to remove plastic material from mold.
3. Perform material removal actions following facility's policy and procedures (e.g., purge barrel of injection molding machine, etc.).
4. Turn off electric, hydraulic and pneumatic power to molding/forming machine.
5. Shut off cooling supply for molding/forming machine and/or mold.
6. Follow facility's policy and procedures for preventative maintenance and cleaning of mold.

**PERFORMANCE ASSESSMENT CRITERIA**

All local, state and federal standards/regulations are followed.

All manufacturers' specifications and facility's policy and procedures are followed.



**PRODUCT**

Molding/forming machine is cleared of material and powered down.

**PROCESS**

All performance elements for shutting down processing machine are critical and must be performed in sequence.

**SKILL STANDARD****CONDITIONS OF PERFORMANCE**

Given the following:

- Production requirements for shift
- Approved standards (e.g., properly molded/formed product, etc.)
- Descriptions and/or examples of molding/forming problems
- Descriptions and/or examples of secondary operation problems
- Descriptions of molding or secondary operation conditions that warrant immediate supervisor's attention
- Molding/forming machine operation manual
- Secondary tooling operation manuals
- Facility's policy and procedures
- Local, state and federal standards/regulations

**WORK TO BE PERFORMED**

Report shift production problems.

**PERFORMANCE CRITERIA**

Skill is performed according to molder/former's specifications.

Shift production problems are reported as they occur.

All shift production problems are documented.

**PERFORMANCE ELEMENTS**

1. Document molding/forming problems during shift (e.g., part ejection difficulties; persistent part defects; interruption in material supply to molding machine; unusual sounds from production equipment; etc.) per facility's policy and procedures.
2. Document problems with secondary operation equipment during shift (e.g., faulty mechanical operation; incorrect heats; interruption in material supply required for secondary operation; etc.) per facility's policy and procedures.
3. Report problems to shift supervisor for items that warrant immediate attention as defined by facility's policy and procedures.

**PERFORMANCE ASSESSMENT CRITERIA**

All local, state and federal standards/regulations are followed.

All manufacturers' specifications and facility's policy and procedures are followed.

**PRODUCT**

Production problems are documented and reported to shift supervisor.

**PROCESS**

All performance elements for reporting shift production problems are critical.  
Performance elements are numbered to show an appropriate sequence for completing the skill; however, a different sequence may be used.

**PART QUALITY VERIFICATION****SKILL STANDARD****CONDITIONS OF PERFORMANCE**

Given the following:

- List of critical characteristics (e.g., for blueprint, control plan, process sheet, etc.)
- Criterion for defining products which could be reworked
- Criterion for defining products which must be processed for regrind
- Criterion for defining products which must be scrapped as trash
- Written instructions
- List of photographs or samples of molding/forming defects
- Relevant precision measuring tools
- Molded products to be inspected
- Inspection equipment operation manual
- Equipment manufacturers' specifications
- Material manufacturers' specifications
- Facility's policy and procedures
- Local, state and federal standards/regulations

**WORK TO BE PERFORMED**

Perform visual, measurement and test inspections on molded/formed product to discriminate rework from regrind.

**PERFORMANCE CRITERIA**

Skill is performed according to molder/former's specifications.

All relevant paperwork is completed according to facility's policy and procedures.

Time required to complete the skill varies with product complexity and precision of inspection required.

**PERFORMANCE ELEMENTS**

1. Review critical characteristics.
2. Secure molded product.
3. Perform appropriate quality checks (e.g., test check, measure check, visual check, etc.) according to facility's policy and procedures.
4. Record inspection results.
5. Interpret inspection results in order to segregate products that have either acceptable or rejectable quality inspection results.
6. Segregate unacceptable products according to facility's policy and procedures into one of the following categories,
  - a. Rework
  - b. Regrind
  - c. Unusable scrap

## **PERFORMANCE ASSESSMENT CRITERIA**

All local, state and federal standards/regulations are followed.

All manufacturers' specifications and facility's policy and procedures are followed.

### **PRODUCT**

---

Inspection is performed and defective parts are identified and segregated into appropriate categories.

### **PROCESS**

---

All performance elements for performing inspections are critical and must be performed in sequence.

**SKILL STANDARD****CONDITIONS OF PERFORMANCE**

Given the following:

- List of critical characteristics (e.g., for blueprint, control plan, process sheet, etc.)
- Written instructions
- Appropriate precision measuring tools
- Control chart and/or quality audit record book
- Molded/formed products to be inspected
- Statistical Process Control (SPC) guidelines
- Facility's policy and procedures
- Local, state and federal standards/regulations

**WORK TO BE PERFORMED**

Record SPC/quality data measured on control chart to track product quality.

**PERFORMANCE CRITERIA**

Skill is performed according to molder/former's specifications.

Time required to complete the skill varies with product complexity and precision of inspection required.

**PERFORMANCE ELEMENTS**

1. Verify calibration of required measuring device.
2. Secure molded/formed product or number of products for quality checking.
3. Secure control chart and/or quality audit record book.
4. Make measures of product(s) as specified in critical characteristics documentation.
5. Record data specified in control chart and/or quality audit book.
6. Inform shift supervisors of products that measure outside accepted limits.

**PERFORMANCE ASSESSMENT CRITERIA**

SPC/quality data is recorded according to control chart and/or quality audit record book.

All manufacturers' specifications and facility's policy and procedures are followed.

**PRODUCT**

---

SPC/quality data is recorded to make historical record of product quality.  
Documentation reveals when unacceptable quality began during production shift.

**PROCESS**

---

All performance elements for recording SPC/quality data are critical and must be performed in sequence.

**SKILL STANDARD****CONDITIONS OF PERFORMANCE**

Given the following:

- Personal Protective Equipment (PPE)
- Production requirements for shift
- Instructions on secondary operations to be performed on molded products
- Tools required to set up secondary tooling
- Secondary tooling operation manuals
- Equipment manufacturers' specifications
- Material manufacturers' specifications
- Facility's policy and procedures
- Local, state and federal standards and regulations

**WORK TO BE PERFORMED**

Set-up tooling needed to perform secondary operations (e.g., ultrasonic welding, hot stake welding, labeling or trimming, etc.).

**PERFORMANCE CRITERIA**

Skill is performed according to molder/former's specifications.

Time required to complete the skill varies with complexity and number of secondary operation toolings required.

**PERFORMANCE ELEMENTS**

1. Secure secondary tooling.
2. Adjust secondary tooling for product being molded, if necessary.
3. Activate secondary tooling with appropriate power (e.g., pneumatic or electrical, etc.), as necessary.
4. Process a molded/formed product with secondary tooling to verify proper operation of equipment.
5. Verify operation of secondary equipment by making measurements as specified in critical characteristics documentation.

**PERFORMANCE ASSESSMENT CRITERIA**

All local, state and federal standards and regulations are followed.

All manufacturers' specifications and facility's policy and procedures are followed.



**PRODUCT**

Secondary tooling is properly set up and functioning correctly.

**PROCESS**

All performance elements for set up of secondary operation tooling are critical and must be performed in sequence.

**SECONDARY OPERATIONS****SKILL STANDARD****CONDITIONS OF PERFORMANCE**

Given the following:

- Personal Protective Equipment (PPE)
- List of critical characteristics (e.g., for blueprint, control plan, process sheet, example of correct secondary operation product, etc.)
- Molded/formed product to be processed
- Control chart and/or quality record book
- Secondary tooling operation manual
- Equipment manufacturers' specifications
- Material manufacturers' specifications
- Facility's policy and procedures
- Local, state and federal standards/regulations

**WORK TO BE PERFORMED**

Verify results of secondary operations.

**PERFORMANCE CRITERIA**

Skill is performed according to molder/former's specifications.

Time required to complete the skill varies with product complexity and number of secondary operations required.

**PERFORMANCE ELEMENTS**

1. Perform secondary operation on molded/formed product.
2. Measure product(s) as specified in critical characteristics documentation.
3. Interpret inspection results in order to segregate products that have either acceptable or rejectable quality inspection results.
4. Segregate unacceptable products according to facility's policy and procedures into one of the following categories,
  - a. Rework
  - b. Regrind
  - c. Unusable scrap

**PERFORMANCE ASSESSMENT CRITERIA**

All local, state and federal standards/regulations are followed.

All manufacturers' specifications and facility's policy and procedures are followed.

**PRODUCT**

Secondary operation results are verified.

**PROCESS**

All performance elements for verifying results of secondary operations on molded/formed products are critical and must be performed in sequence.

**SECONDARY OPERATIONS****SKILL STANDARD****CONDITIONS OF PERFORMANCE**

Given the following:

- Production requirements for shift
- Instructions, drawings, photographs of how molded/formed products are to be packaged
- Appropriate packaging equipment (e.g., scale, discreet counting device, etc.)
- Packing material (e.g., boxes, labels, shrink-wrap, etc.)
- Facility's policy and procedures
- Local, state and federal standards/regulations

**WORK TO BE PERFORMED**

Package molded/formed products.

**PERFORMANCE CRITERIA**

Skill is performed according to facility's policy and procedures.

Time required to complete the skill varies with packaging complexity and number of units packaged at one time.

**PERFORMANCE ELEMENTS**

1. Secure product to be packaged.
2. Secure proper amount of packaging material.
3. Count quantity to be packaged.
4. Pack and label product following packaging instructions.

**PERFORMANCE ASSESSMENT CRITERIA**

All local, state and federal standards/regulations are followed.

All manufacturers' specifications and facility's policy and procedures are followed.

**PRODUCT**

Molded/formed products are packaged and labeled.

**PROCESS**

All performance3 elements for packaging molded/formed products are critical and must be performed in sequence.

<b>Academic Skills</b>	Skills (and related knowledge) contained in the subject areas and disciplines addressed in most national and state educational standards, including English, mathematics, science, etc.
<b>Assessment</b>	A process of measuring performance against a set of standards through examinations, practical tests, performance observations and/or the completion of work portfolios.
<b>Content Standard</b>	A specification of what someone should know or be able to do to successfully perform a work activity or demonstrate a skill.
<b>Critical Work Functions</b>	<p>Distinct and economically meaningful sets of work activities critical to a work process or business unit which are performed to achieve a given work objective with work outputs that have definable performance criteria. A critical work function has three major components:</p> <ul style="list-style-type: none"> <li>• <b>Conditions of Performance:</b> The information, tools, equipment and other resources provided to a person for a work performance.</li> <li>• <b>Work to Be Performed:</b> A description of the work to be performed.</li> <li>• <b>Performance Criteria:</b> The criteria used to determine the required level of performance. These criteria could include product characteristics (e.g., accuracy levels, appearance), process or procedure requirements (e.g., safety, standard professional procedures) and time and resource requirements. The IOSSCC requires that these performance criteria be further specified by more detailed individual performance elements and assessment criteria.</li> </ul>
<b>Credentialing</b>	The provision of a certificate or award to an individual indicating the attainment of a designated set of knowledge and skills and/or the demonstration of a set of critical work functions for an industry/occupational area.
<b>Illinois Occupational Skill Standards and Credentialing Council (IOSSCC)</b>	Legislated body representing business and industry which establishes skill standards criteria, endorses final products approved by the industry subcouncil and standards development committee and assists in marketing and dissemination of occupational skill standards.
<b>Industry</b>	Type of economic activity, or product or service produced or provided in a physical location (employer establishment). They are usually defined in terms of the Standard Industrial Classification (SIC) system.

<b>Industry Subcouncil</b>	Representatives from business/industry and education responsible for identifying and prioritizing occupations for which occupational performance skill standards are adapted, adopted or developed. They establish standards development committees and submit developed skill standards to the IOSSCC for endorsement. They design marketing plans and promote endorsed skill standards across the industry.
<b>Knowledge</b>	Understanding the facts, principles, processes, methods and techniques related to a particular subject area, occupation or industry.
<b>Occupation</b>	A group or cluster of jobs, sharing a common set of work functions and tasks, work products/services and/or worker characteristics. Occupations are generally defined in terms of a national classification system including the Standard Occupational Classification (SOC), Occupational Employment Statistics (OES) and the Dictionary of Occupational Titles (DOT).
<b>Occupational Cluster</b>	Grouping of occupations from one or more industries that share common skill requirements.
<b>Occupational Skill Standards</b>	Specifications of content and performance standards for critical work functions or activities and the underlying academic, workplace and occupational knowledge and skills needed for an occupation or an industry/occupational area.
<b>Occupational Skills</b>	Technical skills (and related knowledge) required to perform the work functions and activities within an occupation.
<b>Performance Standard</b>	A specification of the criteria used to judge the successful performance of a work activity or the demonstration of a skill.
<b>Product Developer</b>	Individual contracted to work with the standard development committee, state liaison, industry subcouncil and IOSSCC for the adaptation, adoption or development of skill standards content.
<b>Reliability</b>	The degree of precision or error in an assessment system so repeated measurements yield consistent results.
<b>Skill</b>	A combination of perceptual, motor, manual, intellectual and social abilities used to perform a work activity.
<b>Skill Standard</b>	Statement that specifies the knowledge and competencies required to perform successfully in the workplace.

<b>Standards Development Committee</b>	Incumbent workers, supervisors and human resource persons within the industry who perform the skills for which standards are being developed. Secondary and postsecondary educators are also represented on the committee. They identify and verify occupational skill standards and assessment mechanisms and recommend products to the industry subcouncil for approval.
<b>State Liaison</b>	Individual responsible for communicating information among all parties (e.g., IOSSCC, subcouncil, standard development committee, product developer, project director, etc.) in skill standard development.
<b>Third-Party Assessment</b>	An assessment system in which an industry-designated organization (other than the training provider) administers and controls the assessment process to ensure objectivity and consistency. The training provider could be directly involved in the assessment process under the direction and control of a third-party organization.
<b>Validity</b>	The degree of correspondence between performance in the assessment system and job performance.
<b>Workplace Skills</b>	The generic skills essential to seeking, obtaining, keeping and advancing in any job. These skills are related to the performance of critical work functions across a wide variety of industries and occupations including problem solving, leadership, teamwork, etc.

## **APPENDIX B**

## **ILLINOIS OCCUPATIONAL SKILL STANDARDS AND CREDENTIALING COUNCIL**

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**Margaret Blackshere**

AFL-CIO

---

**Judith Hale**

Hale Associates

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**Michael O'Neill**

Chicago Building Trades Council

---

**Janet Payne**

United Samaritans Medical Center

---

**Harold Reetz**

Illinois Fertilizer & Chemical Association  
Potash and Phosphate Institute

---

**Gene Rupnik**

Hospitality Industry

---

**Jim Schultz**

Illinois Retail Merchants Association  
Walgreen Company

---

**Larry Vaughn**

Illinois Chamber of Commerce



<b>Dale Adamson</b>	United Township Area Career Center East Moline, IL
<b>Bruce Braker</b>	President Tooling and Manufacturing Association
<b>Blouke Carus</b>	President Carus Corporation
<b>Frank Cavarretta</b>	Subdistrict Director United Steelworkers of America
<b>Gerson Ecker</b>	Ecker-Erhardt
<b>Ken Knott</b>	Business Agent District 9 Machinist
<b>Steven Koplnskd, Chair</b>	General Manager Abrasive-Form, Inc.
<b>George Marshall</b>	Hoffer Plastics
<b>Bob Shaw</b>	Heartland Community College
<b>Sam Splear</b>	Manager, Employee Relations/Employee Development John Deere Harvester
<b>Marvin Wortell</b>	Chairman Triton Industries
<b>Ronald Engstrom</b>	State Liaison Illinois State Board of Education

## APPENDIX D

## PLASTICS MOLDING CLUSTER SKILL STANDARDS DEVELOPMENT COMMITTEE

<b>Skip Glatt</b>	GAIM Engineering, Inc,
<b>John S. Gondek</b>	Professor of Industrial Manufacturing Technology Elgin Community College
<b>Tom Hallam</b>	Instructor Streator High School.
<b>Guy Hernandez</b>	Innovative Plastech, Inc.
<b>George Marshal</b>	Hoffer Plastics Corporation
<b>W.C. (Buzz) Miller III</b>	President Du Call Miller Plastics, Inc.
<b>Terry Robinson</b>	ITW Impro
<b>Raymond Steinhart</b>	President Mastermolding, Inc.
<b>Randy VanKeuren</b>	Training Manager Plastipak Packaging, Inc.
<b>John Winzeler</b>	Winzeler Plastics
<b>Louis Reifschneider, Ph.d</b>	Product Developer Illinois State University
<b>Ronald Engstrom</b>	State Liaison Illinois State Board of Education

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| <b>A. Developing an Employment Plan</b> | <ol style="list-style-type: none"> <li>1. Match interests to employment area.</li> <li>2. Match aptitudes to employment area.</li> <li>3. Identify short-term work goals.</li> <li>4. Match attitudes to job area.</li> <li>5. Match personality type to job area.</li> <li>6. Match physical capabilities to job area.</li> <li>7. Identify career information from counseling sources.</li> <li>8. Demonstrate a drug-free status.</li> </ol> |
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| <b>B. Seeking and Applying for Employment Opportunities</b> | <ol style="list-style-type: none"> <li>1. Locate employment opportunities.</li> <li>2. Identify job requirements.</li> <li>3. Locate resources for finding employment.</li> <li>4. Prepare a resume.</li> <li>5. Prepare for job interview.</li> <li>6. Identify conditions for employment.</li> <li>7. Evaluate job opportunities.</li> <li>8. Identify steps in applying for a job.</li> <li>9. Write job application letter.</li> <li>10. Write interview follow-up letter.</li> <li>11. Complete job application form.</li> <li>12. Identify attire for job interview.</li> </ol> |
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| <b>C. Accepting Employment</b> | <ol style="list-style-type: none"> <li>1. Apply for social security number.</li> <li>2. Complete state and federal tax forms.</li> <li>3. Accept or reject employment offer.</li> <li>4. Complete employee's Withholding Allowance Certificate Form W-4.</li> </ol> |
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| <b>D. Communicating on the Job</b> | <ol style="list-style-type: none"> <li>1. Communicate orally with others.</li> <li>2. Use telephone etiquette.</li> <li>3. Interpret the use of body language.</li> <li>4. Prepare written communication.</li> <li>5. Follow written directions.</li> <li>6. Ask questions about tasks.</li> </ol> |
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| <b>E. Interpreting the Economics of Work</b> | <ol style="list-style-type: none"> <li>1. Identify the role of business in the economic system.</li> <li>2. Describe responsibilities of employee.</li> <li>3. Describe responsibilities of employer or management.</li> <li>4. Investigate opportunities and options for business ownership.</li> <li>5. Assess entrepreneurship skills.</li> </ol> |
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| <b>F. Maintaining Professionalism</b> | <ol style="list-style-type: none"> <li>1. Participate in employment orientation.</li> <li>2. Assess business image, products and/or services.</li> <li>3. Identify positive behavior.</li> <li>4. Identify company dress and appearance standards.</li> <li>5. Participate in meetings in a positive and constructive manner.</li> <li>6. Identify work-related terminology.</li> <li>7. Identify how to treat people with respect.</li> </ol> |
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<b>G. Adapting to and Coping with Change</b>	<ol style="list-style-type: none"> <li>1. Identify elements of job transition.</li> <li>2. Formulate a transition plan.</li> <li>3. Identify implementation procedures for a transition plan.</li> <li>4. Evaluate the transition plan.</li> <li>5. Exhibit ability to handle stress.</li> <li>6. Recognize need to change or quit a job.</li> <li>7. Write a letter of resignation.</li> </ol>
<b>H. Solving Problems and Critical Thinking</b>	<ol style="list-style-type: none"> <li>1. Identify the problem.</li> <li>2. Clarify purposes and goals.</li> <li>3. Identify solutions to a problem and their impact.</li> <li>4. Employ reasoning skills.</li> <li>5. Evaluate options.</li> <li>6. Set priorities.</li> <li>7. Select and implement a solution to a problem.</li> <li>8. Evaluate results of implemented option.</li> <li>9. Organize workloads.</li> <li>10. Assess employer and employee responsibility in solving a problem.</li> </ol>
<b>I. Maintaining a Safe and Healthy Work Environment</b>	<ol style="list-style-type: none"> <li>1. Identify safety and health rules/procedures.</li> <li>2. Demonstrate the knowledge of equipment in the workplace.</li> <li>3. Identify conservation and environmental practices and policies.</li> <li>4. Act during emergencies.</li> <li>5. Maintain work area.</li> <li>6. Identify hazardous substances in the workplace.</li> </ol>
<b>J. Demonstrating Work Ethics and Behavior</b>	<ol style="list-style-type: none"> <li>1. Identify established rules, regulations and policies.</li> <li>2. Practice cost effectiveness.</li> <li>3. Practice time management.</li> <li>4. Assume responsibility for decisions and actions.</li> <li>5. Exhibit pride.</li> <li>6. Display initiative.</li> <li>7. Display assertiveness.</li> <li>8. Demonstrate a willingness to learn.</li> <li>9. Identify the value of maintaining regular attendance.</li> <li>10. Apply ethical reasoning.</li> </ol>
<b>K. Demonstrating Technological Literacy</b>	<ol style="list-style-type: none"> <li>1. Demonstrate basic keyboarding skills.</li> <li>2. Demonstrate basic knowledge of computing.</li> <li>3. Recognize impact of technological changes on tasks and people.</li> </ol>
<b>L. Maintaining Interpersonal Relationships</b>	<ol style="list-style-type: none"> <li>1. Value individual diversity.</li> <li>2. Respond to praise or criticism.</li> <li>3. Provide constructive praise or criticism.</li> <li>4. Channel and control emotional reactions.</li> <li>5. Resolve conflicts.</li> <li>6. Display a positive attitude.</li> <li>7. Identify and react to sexual intimidation/harassment.</li> </ol>
<b>M. Demonstrating Teamwork</b>	<ol style="list-style-type: none"> <li>1. Identify style of leadership used in teamwork.</li> <li>2. Match team member skills and group activity.</li> <li>3. Work with team members.</li> <li>4. Complete a team task.</li> <li>5. Evaluate outcomes.</li> </ol>



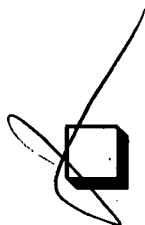


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